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Sixteenth Quarterly Progress Report
on the
Mechanisms of Fire Ignition and Extinguishment
by
E. C. Creitz .

Covering the period 1 May 1963 to 31 July 1963

for
Bureau of Ships
Department of the Navy
Code 638

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions, including sales, purchases, and expenses. It emphasizes the need for a systematic approach to record-keeping, such as using a ledger or accounting software, to ensure that all data is captured and organized properly.

2. The second part of the paper focuses on the importance of regular reconciliation. This involves comparing the company's internal records with external statements, such as bank statements or supplier invoices, to identify and correct any discrepancies. Regular reconciliation helps to prevent errors from accumulating and ensures that the financial statements are accurate.

3. The third part of the paper discusses the importance of maintaining proper documentation for all transactions. This includes keeping receipts, invoices, and other supporting documents for a sufficient period of time to allow for verification and audit. Proper documentation is essential for ensuring the integrity of the financial records and for defending against potential disputes or audits.

4. The fourth part of the paper discusses the importance of maintaining accurate records of all assets and liabilities. This includes tracking the value of inventory, equipment, and other assets, as well as recording all debts and obligations. Accurate records of assets and liabilities are essential for determining the company's net worth and for making informed decisions about its financial future.

5. The fifth part of the paper discusses the importance of maintaining accurate records of all income and expenses. This includes tracking all revenue from sales, as well as all costs of goods sold, operating expenses, and taxes. Accurate records of income and expenses are essential for calculating the company's profit and for determining its tax liability.

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1. Summary

The mass spectrometer being designed for the study of electron attachment and ionic processes in flames is showing satisfactory progress. The new ion source has shown satisfactory performance on positive ions and, after considerable experimentation, has produced some negative ions. A report was written on the velocity modulation scheme. A theoretical resolution of 1,300 was predicted for a duty cycle of 75% compared to the presently realizable resolution of 60 at 80% duty cycle.

2. The Mass Spectrometer

The new electron source unit designed and installed by Mr. Mills resulted in quite satisfactory performance in producing positive ions. Electron currents of 100 microamperes were easily produced. However, the electron energies were too high to produce negative ions in any quantity. An electrostatic screen around the source made it possible to reduce the electron energies so that, by using a compound, perfluoryl chloride, known to produce large quantities of negative ions, it was possible to detect some negative ions. It will now be possible to optimize focusing and accelerating potentials to increase the number of ions subject to analysis.

Theoretical studies directed toward utilization of velocity modulation indicated that the resolution could be increased by a factor of about 20 without sacrifice of duty cycle. While it may not be possible to obtain saw-tooth voltage generators having the required characteristics, it appears that a practical increase of a factor of 10 is possible. The velocity modulation approach also offers the advantage that a large part of the interference caused by overlapping harmonics may be eliminated. A report has been written covering the theoretical development of the idea.

